

## PATENT SPECIFICATION

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(54) PROCESS FOR APPLYING A PATTERN OF ADHESIVE  
TO A SHEET OF MATERIAL

(71) I, BERTRAM CALVERT, a British subject of 719 North Circular Road, London NW2 7BT., do hereby declare the invention, for which I pray that a Patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a process for applying a pattern of adhesive to a sheet of material. The conventional manner of applying such a pattern, for example a line or shape of adhesive to a sheet of material, for example a hand made envelope or air letter, is by means of a strip-gumming machine or expensive specialised equipment but there are disadvantages with this method due to the gum or adhesive being wet and a drying time is therefore required. The present invention is intended to provide a process for applying such a pattern of adhesive without some of the disadvantages associated with strip-gumming machines.

According to the present invention a process for applying a pattern of adhesive to a sheet of material includes applying a layer of an oil-based medium by a printing process to the sheet and before the medium is dry covering it with a powdered liquid-soluble adhesive material, and then heating the printed area to cause the powdered adhesive to fuse into the medium.

After fusing the printed surface is dry and when required the printed surface may now be moistened and will adhere to an appropriate surface as required.

In a preferred method of carrying out the invention the oil-based medium is oil-based ink or varnish and the water-soluble adhesive material can be semi-hydrolysed polyvinyl-alcohol powder of low molecular weight.

With this particular material the printed surface when moistened will adhere to most surfaces including paper, board, wood, glass, leather and many plastics materials.

The adhesive material may conveniently be applied to the sheet material using a thermographic machine, for example, of the kind which is used for thermographic printing.

If desired the pattern applied to the sheet can be arranged to be visible after the powdered adhesive has been fused, thus, the pattern could include indicia which can be read after the application of the process.

The sheet could therefore be printed with a pattern or information and it could be made sticky at any point where there is printing.

The invention also includes a sheet of material to which a pattern of adhesive material has been applied by the process as set forth.

The invention can be performed in many ways but one embodiment will now be described by way of example and with reference to the accompanying drawing which is a diagrammatic view of a thermographic machine.

In the embodiment to be described the adhesive is to be applied in the shape of a pattern to a sheet of paper and this shape is printed onto the paper by using an oil-based printing ink by an offset, letterpress or other suitable printing process in the usual way.

Before the ink is completely dry the sheet is passed through the thermographic machine. This machine is of the kind which can be used for thermographic printing that is, a raised printing process which matter printed by letterpress or other means is dusted with powder while the ink is still wet and heated to make the lettering rise above the surface of the paper thus giving an embossed effect. The paper sheets indicated by reference numeral 1 are delivered by suitable means (not shown) to an endless conveyor 2 by means of which they are passed beneath a hopper 3 in which a suit-

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- able powdered water-soluble adhesive material is carried. In this case the material is semi-hydrolysed polyvinyl-alcohol powder of low molecular weight and is indicated by reference numeral 4. A narrow opening 5 at the lower end of the hopper 3 spreads a layer of this material over the sheet and thus over the printed pattern. The surplus powder is removed in any convenient way, for example by blowing or vibrating the sheet by means not indicated and the sheet then passes beneath a heater 6 where the adhesive material fuses into the ink. The sheets are now delivered to a chute indicated by reference numeral 7 from which they can be gathered by an convenient means.
- The heat provided by the heating means 6 and the speed of the conveyor 2 are adjusted to achieve perfect fusing of the adhesive material into the ink allowing for the area and dimensions of the print, the quality and thickness of the paper sheets 1, the quality and amount of ink applied in the printing process and the quality and amount of powder applied.

The ink is dried when fused by the heating means 6 so that the sheet is ready for immediate use or can be stacked without difficulty. The printed surface may now however be moistened and will adhere to most surfaces including paper, board, wood, glass, leather and many plastics materials.

The process has many advantages over the well-known strip-gumming process because any shape may be reproduced by the printing process without necessarily covering the two edges of the paper as is necessary on strip-gumming machines where wheels run continuously over the surface. As no moisture is involved in the process the paper does not curl, this curling being a great problem with normal strip gumming. The drying time associated with normal strip-gumming processes is not required and therefore the paper does not need to be placed into drying racks or complexes. The print "tacks" immediately upon being moistened with excellent strength of adhesion to most surfaces.

A further advantage is that most printers do not have strip-gumming machinery and therefore pass their strip-gumming orders to trade specialists. This is expensive and time consuming and for a comparatively modest outlay a printer can purchase a thermographic machine on which they can not only apply a pattern of adhesive as set forth above but also use the thermographic machine for printing thermographically. Yet a further advantage is that unskilled labour can be used to operate the thermograph machine.

If desired the ink as printed to the paper sheet could contain pigment so that a printed pattern or indicia is applied. Thus the sheet could be printed with information or a

pattern and pass through the machine. The water-soluble adhesive material 4 is applied as described above and it will adhere to and become fused to the ink by the heating means 6. Thus, all the indicia or pattern on the sheet would carry the adhesive material. With this arrangement therefore any part of the sheet could be moistened to become sticky as required.

If the sheet was intended to be, for example, a sticker to be secured behind the windscreens of a motor vehicle then the pattern or indicia could be applied as described above and the "sticker" could be held in place merely by moistening the indicia or pattern at the corners of the sheet, thus providing four sticky areas. If the whole sheet was moistened then of course the whole sheet would stick to the car windscreens but moistening would only be required in small areas as described above. When employing this process therefore the printing and provision of adhesive is accomplished in one operation by utilising the actual indicia or pattern itself.

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#### WHAT I CLAIM IS:—

1. A process for applying a pattern of adhesive to a sheet of material which includes applying a layer of an oil-based medium by a printing process to the sheet and before the medium is dry covering it with a powdered liquid-soluble adhesive material, and then heating the printed area to cause the powdered adhesive to fuse into the medium.
2. A process as claimed in claim 1 in which the oil-based medium is oil-based ink or varnish.
3. A process as claimed in claim 1 or claim 2 in which the liquid soluble adhesive material is semi-hydrolysed polyvinyl-alcohol powder of low molecular weight.
4. A process as claimed in claims 1-3 in which the adhesive material is applied and the sheet heated using a thermograph machine.
5. A process as claimed in any one of claims 1-4 in which the pattern applied to the sheet is visible after the powdered adhesive has been fused.
6. A process as claimed in claim 5 in which the pattern includes indicia.
7. A process for applying a pattern of adhesive to a sheet of material substantially as described herein with reference to and as shown in the accompanying drawing.

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8. A sheet of material to which a pattern of adhesive material has been applied by the process set forth in any one of the preceding claims.

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of  
the Original on a reduced scale

